

REMARKS

Claim Rejections - 35 U.S.C. § 103

The Examiner has rejected claims 1-4 and 10 under 35 USC 103(a) as being unpatentable over Uglow et al. (U.S. Patent No. 6,251,770) in view of Yew et al. (U.S. Patent No. 6,159,845). The Applicant respectfully traverses. The Applicant's claims are not obvious in light of the cited references. In particular Uglow in view of Yew does not teach all of the elements or render obvious independent claims 1, 7, and 10.

Claim 1 teaches the elements of forming a metal structure having *elements of at least one via and at least one interconnect* onto a substrate, said metal structure extending above a surface of the substrate and forming, subsequent to said forming a metal interconnect structure, a carbon-doped oxide (CDO) layer with a first concentration of carbon dopants therein on said substrate *and filling entirely between elements* of said metal interconnect structure. In contrast, Yew teaches forming a dielectric material 134 having a low dielectric constant and poor step coverage over conductive wires 122a and 124a (similar to Applicant's interconnects) to form a dielectric layer 134 over the wires 122a and 124a, and to form *air gaps 136 in between the wires 122a and 124a*. Therefore, Yew does not teach filling entirely between elements of the metal interconnect, and in particular does not teach filling between vias with the dielectric material. Uglow also fails to teach a metal structure extending above a surface of the substrate and forming a CDO layer on the substrate and filling entirely between elements of the metal interconnect structure with the CDO layer. Claims 3-4 are also not taught by the cited references because they depend from claim 1 and thus incorporate the elements of claim 1.

Claim 7 teaches the elements of a first layer of CDO having a first concentration of carbon dopants, a second layer of CDO having a second concentration of carbon dopants formed above the first layer of CDO, and a third layer of CDO having a third concentration of carbon dopants formed above the second layer of CDO, the first and the third layers having higher concentrations of carbon than the second layer. Claim 10 teaches the elements of a first layer of CDO having a first concentration of carbon dopants, a second layer of CDO having a second concentration of carbon dopants formed above the first layer of CDO, and a third layer of CDO having a third concentration of carbon dopants, the first and the third

layers having lower concentrations than the second layer. Both Uglow and Yew fail to teach three layers of CDO having different carbon dopant concentrations, and where the first and third layers have higher carbon dopant concentrations than the second layer that separates them, or where the first and the third layers have lower carbon dopant concentrations than the second layer that separates them.

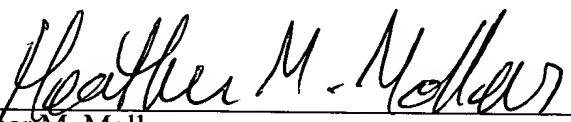
Therefore, the Applicant respectfully submits that claims 1-4, 7, and 10 are not obvious in light of Uglow in view of Yew.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

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